

Appl. No. : 10/007,003
Filed : November 9, 2001

AMENDMENTS TO THE CLAIMS

Listed below are the changes made to the claims, in which the insertions are underlined and deletions are shown by strikethrough. The listing of claims below replaces all prior versions and listings of claims in the application. The list of claims presents each claim with its respective status shown in parentheses.

1. **(Currently Amended)** A distributed file storage system comprising:
 - a plurality of storage modules in communication with each other, said plurality of storage modules including:
 - a first storage module including a processing module;
 - a second storage module including a processing module;
 - a third storage module including a processing module; and
 - a fourth storage module including a processing module;
 - a file stored on the distributed file storage system;
 - a first file portion of the file comprising a first set of file data stored in the first storage module;
 - a second file portion of the file comprising a second set of file data stored in the second storage module, wherein the second set of file data is different from the first set of file data;
 - a first metadata to identify in part related to the location of the file, the first metadata stored on the first storage module, the second storage module, the third storage module, and the fourth storage module;
 - a second metadata, different at least in part from the first metadata, to supplement the first metadata in identifying related to the location of the file, the second metadata stored on at least one, but not all, of the first storage module, the second storage module, the third storage module, and the fourth storage module but not on all of said storage modules;
 - a switch module in communication with the set of storage modules, the switch module configured to receive a read request for the file stored on the distributed file storage system and to send the read request to any one of the plurality of storage modules;

Appl. No. : **10/007,003**
Filed : **November 9, 2001**

each of the plurality of storage modules capable of using the first metadata to process respond to and implement the read request on behalf of the distributed file storage system; and

an allocator module for distributing the first and second metadata and the file portions across the storage modules in a manner appropriate for the storage system and for each file.

2. **(Previously Presented)** The distributed file storage system of Claim 1, further comprising error correction data related to the file, the error correction data stored in the distributed file storage system.

3. **(Previously Presented)** The distributed file storage system of Claim 2, further comprising error correction data which includes parity information.

4. **(Previously Presented)** The distributed file storage system of Claim 3, further comprising parity information which includes parity data blocks and location information indicating where the parity data blocks are stored.

5. **(Previously Presented)** The distributed file storage system of Claim 2, further comprising error correction data which includes redundancy data related to the file, and the second metadata which further indicates the location of the redundancy data.

6. **(Currently Amended)** The distributed file storage system of Claim 5, further comprising first metadata related to the location of the file which includes metadata related to the root directory.

7. **(Currently Amended)** The distributed file storage system of Claim 1, further comprising storage modules which are configured to receive a request to and initiate the request to move the first file portion in real-time from the first storage module to the third storage module, and to send a request to update the second metadata to indicate the location of the moved first file portion.

8. **(Currently Amended)** The distributed file storage system of Claim 1, further comprising storage modules which are configured to receive a request to and initiate the request to replicate the first file portion in real-time and to store the replicated first file portion on the third a different storage module, and to send a request to update the second metadata to indicate the location of the replicated first file portion.

Appl. No. : **10/007,003**
Filed : **November 9, 2001**

9. **(Previously Presented)** The distributed file storage system of Claim 1, further comprising second metadata which includes metadata related to the locations in which the file data is stored.

10. **(Previously Presented)** The distributed file storage system of Claim 1, further comprising second metadata which includes metadata related to a parent directory of the file.

11. **(Previously Presented)** The distributed file storage system of Claim 1, further configured to handle more READ requests than WRITE requests.

12. **(Previously Presented)** The distributed file storage system of Claim 1, further configured to handle block transactions.

13-42. (Canceled)

43. **(Previously Presented)** The distributed file storage system of Claim 1, wherein the file has been stored on a number of the storage modules of the set of storage modules, wherein the number is determined specifically for the file, and wherein the number is equal to or greater than two.

44-61. (Canceled).

62. **(Previously Presented)** A file based distributed storage system comprising:
several storage modules linked together, each of which is configured to handle read and write requests on behalf of the entire distributed storage system;

directory metadata configured to be used to identify the location of each file stored on the storage system, wherein the directory metadata is distributed across at least some of the several storage modules and more than one storage module must be used in order to locate a file;

an allocation module configured to allocate the directory metadata across the storage modules of the storage system as appropriate to optimize the functionality of the storage system.

63. **(Previously Presented)** The file based distributed storage system of Claim 62, further comprising the directory metadata of the storage system which is arranged in a hierarchical structure.

64. **(Currently Amended)** The file based distributed storage system of Claim 63, further comprising directory metadata which includes a first and a second metadata structures in

Appl. No. : **10/007,003**
Filed : **November 9, 2001**

order to locate a file, said first directory metadata structure referencing said second directory metadata structure; and said second directory metadata structure referencing the file;;

65. **(Previously Presented)** The file based distributed storage system of Claim 64, further comprising file metadata referenced by said second metadata structure and configured to reference data blocks that comprise the desired file.

66. **(Previously Presented)** The file based distributed storage system of Claim 65, further comprising the file metadata which is stored on a different storage module than the second directory metadata structure.

67. **(Currently Amended)** A file based distributed storage system comprising:
several storage modules linked together, each of which is configured to handle read and write requests on behalf of the entire distributed storage system;

file metadata configured to be used to identify the location of data blocks comprising a file stored on the storage system, wherein the data blocks are distributed across at least some of the several storage modules and more than one storage module must be used in order to collect assemble the file;

an allocation module configured to flexibly allocate the blocks and the file metadata across the storage modules of the storage system as appropriate to optimize the functionality of the storage system.

68. **(Previously Presented)** The file based distributed storage system of Claim 66, wherein the file is stored in a hierarchical file system.

69. **(Previously Presented)** The file based distributed storage system of Claim 66, further comprising directory metadata configured to reference the file metadata.

70. **(Previously Presented)** The file based distributed storage system of Claim 69, wherein the file metadata is stored on a different storage module than at least a portion of the directory metadata that leads to the location of the file.

71. **(New)** The distributed file storage system of Claim 1, wherein the first metadata identifies the location of the second metadata.

72. **(New)** The distributed file storage system of Claim 1, wherein the second metadata identifies the location of a third metadata, different at least in part from the first

Appl. No. : **10/007,003**
Filed : **November 9, 2001**

metadata and the second metadata, to supplement the first metadata and the second metadata in identifying the location of the file.

73. (New) The distributed file storage system of Claim 1, wherein the second metadata identifies the location of at least one of the following: the first set of file data and the second set of file data.

74. (New) The file based distributed storage system of Claim 67, wherein the allocation module further comprises changing the allocation of the blocks and/or the file metadata across the storage modules of the storage system as the storage and/or retrieval demands change over time.

75. (New) A file based distributed storage system comprising:
several storage modules linked together, each of which is configured to handle read and write requests on behalf of the entire distributed storage system; and
directory metadata necessary to identify the location of a file stored on the storage system, wherein the directory metadata is distributed across a subset of the several storage modules, each storage module in the subset storing a portion of the directory metadata that is different at least in part from portions stored on the other storage modules in the subset.